

Installation Checklist – HP ProLiant Cluster for HP StorageWorks Modular Smart Array1000 for Small Business using Microsoft Windows 2000 Advanced Server

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ProLiant Cluster for MSA1000 for Small Business

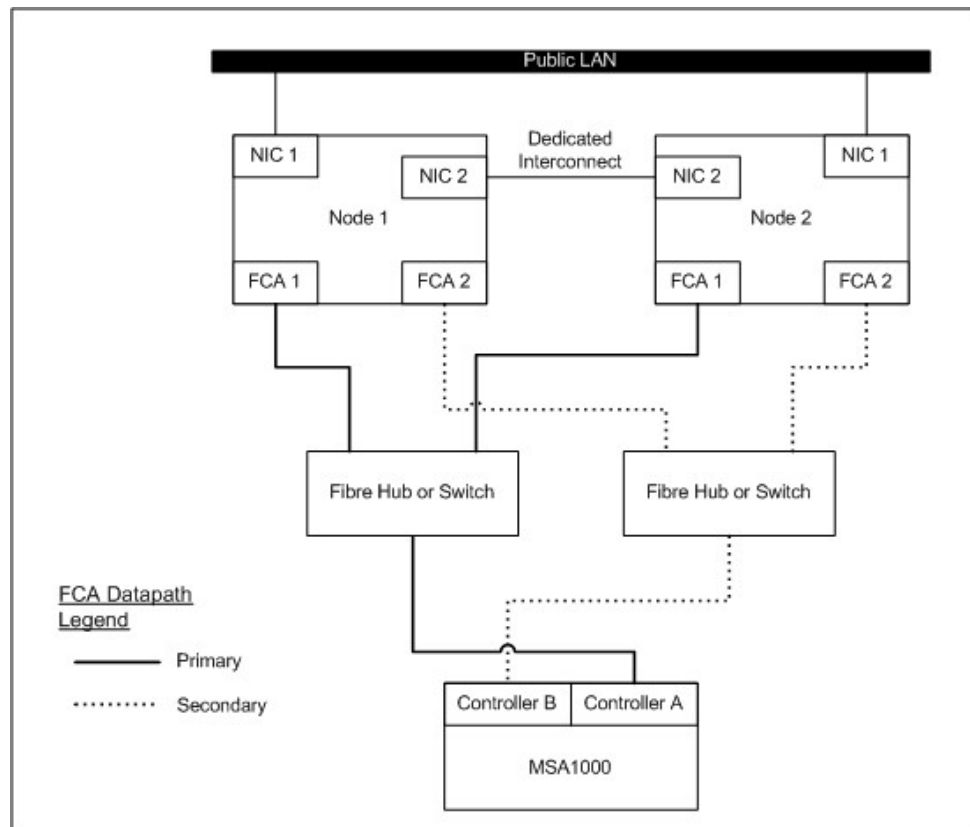


The HP ProLiant Cluster for Modular Smart Array 1000 for Small Business is a flexible and scalable fibre channel cluster powered by ProLiant servers and StorageWorks Modular SAN Arrays ensuring “always on” operations of your business critical applications. The ProLiant Cluster for Modular Smart Array 1000 (MSA1000) for Small Business offers redundant FCAs, fabrics and array controllers for a fully redundant storage configuration. Key features are:

- Flexibility to create and deploy industry-standard, fibre channel clustered solution with the latest, industry-standard ProLiant and StorageWorks platforms.
- Scalable, Modular SAN Array 1000 (MSA1000) designed to reduce the complexity of SAN deployment while maximizing cluster performance, uptime and storage capacity.
- Unified suite of cluster management tools offer superior management capabilities to simplify the installation of complex cluster configurations and assure consistent availability.

Hardware Cabling Scheme

Figure 1. Hardware cabling scheme



Note: This diagram depicts a two-node Windows 2000 Advanced Server cluster.

Software and Hardware Requirements

The following table provides a checklist of the required software versions and, if applicable, any items to execute before beginning the installation. Place a checkmark (✓) in the box after completing each step.

✓	Software and Hardware Requirements
<input type="checkbox"/>	<p>Before installing your HP ProLiant Cluster for MSA1000 for Small Business cluster solution, it is very important to refer to the HP Cluster Configuration Support website for details on components that make up a valid cluster configuration. There is a support matrix for each HP Cluster that details components that represent quality tested and supported HP Cluster configurations.</p> <p>Using the link below, select the appropriate operating system and storage platform and then refer to the row of deliverables that are relevant to the configuration you require.</p> <p>The HP Cluster Configuration Support website can be found at http://h18022.www1.hp.com/solutions/enterprise/highavailability/answercenter/configuration-all.html</p> <p><input type="checkbox"/> SmartStart CD</p>

<input type="checkbox"/>	Two supported ProLiant Servers, supported fibre channel adapters, two or more supported network adapters, two supported fibre channel switches or hubs, and one or more MSA1000(s).
<input type="checkbox"/>	Review and understand any Read This First (RTF) and Getting Started cards that were shipped with the product.
<input type="checkbox"/>	Microsoft Windows 2000 Advanced Server software and documentation
<input type="checkbox"/>	Microsoft Windows 2000 Advanced Server Service Pack
<input type="checkbox"/>	HP StorageWorks MSA1000 for Small Business Support Software CD
<input type="checkbox"/>	Array Configuration Utility (ACU), which is located on the HP StorageWorks MSA1000 for Small Business Support Software CD
<input type="checkbox"/>	HP Insight Manager (optional)
<input type="checkbox"/>	MSA1000 controller firmware
<input type="checkbox"/>	EMU firmware
<input type="checkbox"/>	FCA firmware and boot bios
<input type="checkbox"/>	Fibre Channel switch firmware
<input type="checkbox"/>	HP ProLiant Cluster for HP StorageWorks Modular Storage Array 1000 for Small Business
<input type="checkbox"/>	Sufficient software rights to install the operating system and software applications on each node.
<input type="checkbox"/>	Ensure all hardware is installed and properly cabled as shown in figure 1 - hardware cabling scheme on page 3.

Gathering Information

The following table provides a checklist for the required input parameters that will facilitate the operating system and cluster installation. Write the information in the values column next to each item. Place a checkmark (✓) in the box after completing each step.

✓	Item	Values	
<input type="checkbox"/>	Name for each node: (Microsoft Windows 2000 Advanced Server supports up to two (2) nodes in a cluster).	Node 1:	Node 2:
<input type="checkbox"/>	Public network connection IP address and subnet mask for each node:	Node 1	Node 2
		IP address: Subnet mask:	IP address: Subnet mask:
<input type="checkbox"/>	Private network connection (cluster heartbeat) IP address and subnet mask for each node:	Node 1	Node 2
		IP address: Subnet mask:	IP address: Subnet mask:

<input type="checkbox"/> WWID, slot number, and bus of each FCA for each node:	Node 1	Node 2
	FCA 1 WWID:	FCA 1 WWID:
	FCA 1 slot and bus:	FCA 1 slot and bus:
	FCA 2 WWID:	FCA 2 WWID:
	FCA 2 slot and bus:	FCA 2 slot and bus:
<input type="checkbox"/> Cluster name:		
<input type="checkbox"/> Cluster IP address and subnet mask:	IP address:	
	Subnet mask:	
<input type="checkbox"/> Default gateway address:	IP address:	
<input type="checkbox"/> WINS server address:	IP address:	
<input type="checkbox"/> DNS address:	IP address:	
<input type="checkbox"/> Local machine Administrator password (used during OS installation):	Know the Administrator password	
<input type="checkbox"/> Domain name:		
<input type="checkbox"/> Domain administrator user name and password (used during OS installation to have the machine join the domain):	Know the user name and password	
<input type="checkbox"/> Domain account name and password for cluster service (this account has special privileges on each cluster node):	Know the user name and password	

Installing Node 1 Operating System

The following table provides a checklist of the operating system installation steps for Node 1. Place a checkmark (✓) in the box after completing each step.

✓	Installing Node 1 Operating System
<input type="checkbox"/>	Power on the switch and then the shared storage. After powering on, wait until the storage system startup complete message appears on the display. It may take a few minutes for the storage system to completely power up.
<input type="checkbox"/>	Power on and boot Node 1 with the SmartStart CD in the CD-ROM drive.
<input type="checkbox"/>	Configure the cluster node using the SmartStart CD. Select Microsoft Windows 2000 Advanced Server as the operating system and follow the SmartStart on-screen instructions and prompts. After the OS installation is complete, SmartStart will automatically install the latest HP support software.
<input type="checkbox"/>	Each cluster node requires at least two network adapters—one to connect to a public network and one to connect to a private network. <u>For the public network connection:</u> If the network adapter can transmit at multiple speeds, then manually specify a speed and duplex mode. The speed for the network adapter should be hard set (manually set) to be the same on all nodes according to the card manufacturer's specification. Best Practice: To provide a maximum level of redundancy, use NIC Teaming capabilities for selected HP network products to provide a redundant public network connection. Please note, however, that NIC Teaming is unsupported for the private network connection.
<input type="checkbox"/>	Configure the TCP/IP settings for the public network connection.
<input type="checkbox"/>	<u>For the private network connection:</u> To eliminate possible private network cluster communication issues refer to Microsoft Knowledge Base (KB) article EN-US258750 to properly setup the private network. http://support.microsoft.com/default.aspx?scid=kb;EN-US;258750
<input type="checkbox"/>	Configure the TCP/IP settings for the private network connection.

☐ Join the Windows domain and reboot when prompted.

☐ After the reboot, log the machine into the domain.

☐ Insert the HP ProLiant Cluster for HP StorageWorks MSA1000 for Small Business Support Software CD. Follow the on screen instructions and perform an Update HBA Driver.

Note: During initial installation, it is required to install or reinstall the FCA driver (Update HBA Driver) in order to install the Multipath drivers as well. The sequence of prompts may vary depending on whether or not a prior FCA driver existed and the status of the MSA1000.

☐ **(Optional)** Install Switch Management Software. This installs HP StorageWorks Switch Manager which enables you to manage the Fibre Channel Switch. In addition, it installs SANsurfer Express and the HP ProLiant Array Controller Utility (ACU), both provide support for managing the MSA1000.

Note: You may use either SANsurfer Express or ACU to manage the MSA1000 but both may not be used simultaneously. The instructions that follow for setting up a cluster configuration utilize the ACU to manage the MSA1000. You may also uninstall any of those products on an individual basis.

☐ Reboot Node 1 when prompted and then log into the domain.

Note: The installation will continue to AutoRun after the reboot. Select Quit and remove the CD when finished.

☐ **(Optional)** Zone nodes and MSA1000 storage. You may choose this option if adding more than one pair of nodes to the switch. Zoning allows you to further isolate each cluster. For more information about zoning, refer to the "Zoning User's Guide" documentation located at:

<http://h18004.www1.hp.com/solutions/enterprise/highavailability/whitepapers/ms-msa1000.html>

☐ Shutdown Node 1 when the installation is complete.

Installing Node 2 Operating System

The following table provides a checklist of the operating system installation steps for Node 2. Place a checkmark (✓) in the box after completing each step.

✓	Installing Node 2 Operating System
<input type="checkbox"/>	Power on and boot Node 2 with the SmartStart CD in the CD-ROM drive.
<input type="checkbox"/>	Configure the cluster node using the SmartStart CD. Select Microsoft Windows 2000 Advanced Server as the operating system and follow the SmartStart on-screen instructions and prompts. After the OS installation is complete, SmartStart will automatically install the latest HP support software.
<input type="checkbox"/>	Each cluster node requires at least two network adapters—one to connect to a public network and one to connect to a private network. <u>For the public network connection:</u> If the network adapter can transmit at multiple speeds, then manually specify a speed and duplex mode. The speed for the network adapter should be hard set (manually set) to be the same on all nodes according to the card manufacturer's specification. Best Practice: To provide a maximum level of redundancy, use NIC Teaming capabilities for selected HP network products to provide a redundant public network connection. Please note, however, that NIC Teaming is unsupported for the private network connection.
<input type="checkbox"/>	Configure the TCP/IP settings for the public network connection.
<input type="checkbox"/>	<u>For the private network connection:</u> To eliminate possible private network cluster communication issues refer to Microsoft Knowledge Base (KB) article EN-US258750 to properly setup the private network. http://support.microsoft.com/default.aspx?scid=kb;EN-US;258750
<input type="checkbox"/>	Configure the TCP/IP settings for the private network connection.

- ☐ Join the Windows domain and reboot when prompted.
- ☐ After the reboot, log the machine into the domain.
- ☐ Insert the HP ProLiant Cluster for HP StorageWorks MSA1000 for Small Business Support Software CD. Follow the on screen instructions and perform an Update HBA Driver.
Note: During initial installation, it is required to install or reinstall the FCA driver (Update HBA Driver) in order to install the Multipath drivers as well. The sequence of prompts may vary depending on whether or not a prior FCA driver existed and the status of the MSA1000.
- ☐ **(Optional)** Install Switch Management Software. This installs HP StorageWorks Switch Manager which enables you to manage the Fibre Channel Switch. In addition, it installs SANsurfer Express and the HP ProLiant Array Controller Utility (ACU), both provide support for managing the MSA1000.
Note: You may use either SANsurfer Express or ACU to manage the MSA1000 but both may not be used simultaneously. The instructions that follow for setting up a cluster configuration utilize the ACU to manage the MSA1000. You may also uninstall any of those products on an individual basis.
- ☐ Reboot Node 2 when prompted and then log into the domain.
Note: The installation will continue to AutoRun after the reboot. Select Quit and remove the CD when finished.
- ☐ Shutdown the node when the installation is complete.

Configuring the Shared Storage

The following table provides a checklist of the steps necessary to configure the MSA1000 storage. Place a checkmark (✓) in the box after completing each step.

✓	Configuring the Shared Storage
<input type="checkbox"/>	Power on Node 1 and log into the domain.
<input type="checkbox"/>	From the desktop of Node 1, select Start → Programs → Compaq/HP System Tools → hp Array Configuration Utility → hp Array Configuration Utility . Note: The Internet Connection Wizard pop-up screen may appear. Internet Explorer must be configured appropriately in order to use the HP Array Configuration Utility. Also, be sure to read the security alert pop-up screen. The Internet Explorer security level may need to be modified in order to use ACU.
<input type="checkbox"/>	Select the MSA1000 controller to configure the shared storage hard drives. Refer to the user guide for the MSA1000 storage system for additional details. If sharing an MSA1000 between multiple clusters, Selective Storage Presentation (SSP) is required for configuration. Refer to the ACU documentation for information on using SSP.
<input type="checkbox"/>	Configure the shared storage drives. IMPORTANT: Create a logical drive using ACU on one of the MSA1000 arrays with at least 510MB of space. Microsoft recommends at least 500MB for the cluster Quorum drive. The extra space for the logical drive size specified in ACU is to account for internal disk size calculations used by ACU. Specifying 510MB will ensure that this size of this disk will be at least 500MB of formatted drive space for use as the Quorum drive. Refer to Microsoft Knowledge Base Article – 280345 or the help documentation on the cluster node for more information on cluster disk sizes. http://support.microsoft.com/default.aspx?scid=kb;EN-US;280345
<input type="checkbox"/>	After the shared storage drives are configured, select Start → Programs → Administrative Tools → Computer Management . Then select Disk Management to create volumes out of the logical drives. Important: DO NOT upgrade the logical drives from Basic to Dynamic. Microsoft Cluster Services does not support dynamic disks.
<input type="checkbox"/>	Be sure to assign drive letters and format the volumes as NTFS.
<input type="checkbox"/>	Close Disk Management for Microsoft Windows 2000 Advanced Server.

Creating the Cluster

The following table provides a checklist for creating the cluster from Node 1. Place a checkmark (✓) in the box after completing each step.

✓	Creating the Cluster
<input type="checkbox"/>	Install the Microsoft Cluster Services (MSCS) component of Microsoft Windows 2000 Advanced Server on Node 1. Refer to the Microsoft Windows 2000 Advanced Server documentation for details on installing MSCS.
<input type="checkbox"/>	Install Microsoft Windows 2000 Service Pack and reboot Node 1 when prompted.
<input type="checkbox"/>	Rerun the ProLiant Support Pack for Windows 2000 to ensure that the latest HP drivers were not overwritten by the service pack installation. Reboot if prompted.
<input type="checkbox"/>	Power on Node 2.
<input type="checkbox"/>	Install and configure the Microsoft Cluster Services (MSCS) component of Microsoft Windows 2000 Advanced Server on Node 2.
<input type="checkbox"/>	Install Microsoft Windows 2000 Service Pack and reboot the node when prompted.
<input type="checkbox"/>	Rerun the ProLiant Support Pack for Windows 2000 to ensure that the latest HP drivers were not overwritten by the service pack installation. Reboot if prompted.
<input type="checkbox"/>	Select Start → Control Panel → HP Management Agents . In the list of Inactive Agents , select Clustering Information and click Add to move this agent to the list of active agents, and then click OK .
<input type="checkbox"/>	Restart the agents when prompted.

Validating the Cluster

To validate the cluster installation, perform the following steps from any cluster node. Place a checkmark (✓) in the box after completing each step.

✓	Validating the Cluster
<input type="checkbox"/>	From the desktop of any node, select Start → Programs → Administrative Tools → Cluster Administrator , and connect to the cluster.
<input type="checkbox"/>	Right click on one of the cluster groups and select Move Group .
<input type="checkbox"/>	Verify the group fails over and all resources come online.
<input type="checkbox"/>	Right click on the same cluster group and select Move Group .
<input type="checkbox"/>	Verify that the group fails over and all resources come online.
<input type="checkbox"/>	Repeat the validating the cluster steps, if desired, for each group.

The installation is now complete.

For more Information

To learn more about HP High Availability and ProLiant Clusters visit the following Web site:

<http://www.hp.com/servers/proliant/highavailability>.

Feedback

Help us improve our technical communication. Let us know what you think about the technical information in this document. Your feedback is valuable and helps us structure future communications.

Please send your comments to hawebserver@hp.com.

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